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Herslund, Lise Byskov; Mtwangi Limbumba , Tatu; Kombe, Wilbard

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The Institutional Challenges and Opportunities for Adopting Landscape-Based Storm Water Management Options in Informal Settlements - Dar Es Salaam City

Tatu Mtwangi-Limbumba¹, Lisa B. Herslund² & Wilbard J. Kombe¹

¹ Institute for Human Settlements Studies, Ardhi University, Dar es Salaam, Tanzania

² Department of Geosciences and Natural Resource Management, University of Copenhagen, Denmark

Correspondence: Tatu Mtwangi-Limbumba, Institute for Human Settlements Studies, Ardhi University, Dar es Salaam, Tanzania. E-mail: tatumtwangi@gmail.com

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Abstract

Increased flooding caused by climate change impacts is a challenge for many cities both in developing and developed countries. The existing storm water drainage systems in place have to be physically constructed and expanded to meet the water run-off challenge. This is an expensive run-off management undertaking for resource poor countries such as Tanzania. Landscape based storm water management (LSM) is put forward as a sustainable option to manage storm water run-off and it also addresses water scarcity problems in under-served urban settlement. However its implementation in cities that are faced with informal residential development is challenging because among other things, LSM requires land for implementation as well as the collaboration of different institutions, disciplines and actors. Drawing from data and information obtained from the Water Resilient Green Cities Africa (WGA) Project in two cities of Africa, this paper explores the planning and institutional challenges for LSM in Dar es Salaam, a rapidly urbanising city. The paper also presents opportunities inherent in the process some of which suggest that local institutions offer a critical platform to collaboratively plan and implement LSM in rapidly urbanising cities.

Keywords: urban planning, sustainable storm water drainage, informal settlements, institutions

1. Introduction

The change in rainfall intensity due to climate change impacts has placed pressure on already overburdened storm water management (SWM) systems in many developing countries. It is suggested that “*Climate change will cause shifts in the global rainfall patterns and consequently increase the intensity of rainfall and the severity of flooding events*” (Parkinson and Mark, 2005:7), thereby calling for concerted efforts by governments to mitigate the risks of rainfall intensity and increased storm water run-off among others. While countries in the global North face the SWM challenges; less developed countries such as Tanzania face even greater hardships due to rapid urbanisation coupled with unguided unplanned residential growth. For example, between 1990 and 2014, the largest increase in slum population in developing regions (i.e. 56 per cent) occurred in sub-Saharan African cities (UN-Habitat, 2016:58). Unplanned or informal settlements are often deprived of basic services; among other things, they lack proper drainage systems which impair the ability to cope with heavy rainfall and consequential flash floods (Parkinson, 2003).

Indeed, the conventional approach to managing storm water for many countries is to dispose it quickly away from the city by using concrete-based drainage channels (Mghuni et al., 2015; Zhou, 2014). For developing countries however, the installation of conventional systems is expensive and thus covers small parts of the city mainly in the central business district (CBD) and planned areas. New plans and development such as those in Dar es Salaam still subscribe to conventional drainage systems (URT, 2012). But their continued construction and the increasing inability of these structural systems to manage flooding puts into question their long-term sustainability thus calling for alternative sustainable solutions for the management of storm water. Such solutions include, Water Sensitive Urban Design (WSUD) and Landscape Based Storm Water Management (Hoyer et al., 2011).

Studies suggest that the transformation to these non-technological solutions entail viewing storm water as a

resource rather than a nuisance to be disposed of quickly (Mghuni et al., 2016; Zhou, 2014; Hoyer *et al*, 2011). Furthermore, the premise of LSM rests on not only utilising the landscape to manage run-off but also use the water to addresses livelihood challenges in the community. The benefits received from the natural environment such as rain water is an opportunity to be harnessed (Roy et al 2017). Countries like Singapore, Denmark, Australia and the United States, to mention but a few, have over the last twenty years responded to flooding in their cities by using the landscape to manage storm water run-off (Hoyer *et al*, 2011: pg 19-20). For the cities of the developing world therefore, adoption of LSM offers an opportunity to learn and *leapfrog* to the sustainable management of storm water.

The objective of this paper therefore, is to highlight the challenges and opportunities revealed in a study aimed at introducing LSM as a storm water management strategy within the backdrop of rapidly urbanising cities and informality.

The specific objectives of the paper are:

- (i) To describe the role of urban planning institutions in stormwater management with reference to informal settlements
- (ii) To understand the role of local institutions and practices in storm-water management with a view towards identifying opportunities for LSM;
- (iii) To propagate the use of LSM as an inexpensive and responsive strategy for the management of run-off that builds upon local strategies.

2. Urban Planning, Institutions and Stormwater Management Challenges in Rapidly Urbanising Cities

Watson, (2009) indicates that urban planning institutions in the global South comprise formal institutions critical for managing space and populations. The planning process is further aided by the ‘Master Plan’, a tool to guide urban land uses according to provisions of zoning regulations so that a planned or “good” city is achieved (*Ibid*, 2009: p.2261). However, the continued practice of urban planning and its “modernist” view of how the city should grow is continually confronted with new spatial growth and processes especially in rapidly urbanizing sub-Saharan African cities.

The rapid urbanization in sub-Saharan African cities is not matched by economic growth nor basic services and infrastructural investment due to institutional constraints and deficiencies; as a result most of the expected benefits of urban planning are hardly experienced and cities face considerable human, physical and environmental risks (Dodman et al, 2017; Satterthwaite, 2017; Manoj et al, 2018). Indeed it is argued that urbanisation becomes even a greater challenge when local authorities and urban managers are unable to guide land use changes and provide services due to weak capacities (Satterthwaite, 2017). The most visible manifestations of the unmatched growth are informal settlements and livelihood activities.

These unprecedented transformations pose challenges to urban local authorities especially with regards to housing and basic service provision. Urban dwellers that cannot acquire or afford formal land for housing are forced to live in unplanned/ informal settlements often located on marginal land where among other risks; climate change impacts such as intense rainfall and flooding increase the frequency of run-off. Flash floods in informal settlements aggravate human risks further weakening the resilience of these spaces (Manoj et al, 2018; Douglas, 2012; Parkinson et al, 2007a).

This paper dwells on the management and challenges of storm water in informal settlements and how local institutions provide opportunities for alternative nature-based storm water management approaches also known as Landscape based stormwater management (LSM).

It is widely recognised by studies that any success in adopting and implementing LSM is embedded in the institutional capacity and arrangements of SWM (Donell et al, 2017; Zhou, 2014; Wong and Brown, 2009). Other researchers note that resistance to change especially by engineers used to conventional methods may be a barrier as well as weak technical capacities to manage storm water in both developed and developing countries respectively (Poustie et al, 2012). However institutions may change to sustainable approaches due to external or internal pressure for example civil society actors and community organizations can engender change in terms of advocacy and action (Carmin et al, 2012). Indeed, change to LSM motivated by civil society or the community in a bottom-up manner may be more feasible in resource constrained cities. Dar es Salaam and many other cities in the developing world have vast experiences in planning with the community especially in slum and informal settlements upgrading projects that are also community-led (Satterthwaite, 2018 pp 26-27).

Although the implementation of sustainable storm water management approaches has been mainly done in the

North, there appear to be opportunities for cities in the South to adopt the approach (Mghuni, 2015). Mghuni (2015:138) further notes that the potential for LSM in the South lies in a bottom-up approach where the community and local level authorities can work together. Referring to the city of Dar es Salaam, the author points to the role of “informal networks and relationships” between community organizations, practitioners and academicians which can help to transition towards landscape based storm water management thus largely overcoming the institutional barriers. This paper attempts to highlight the opportunities therein for planning for LSM at local level.

2.1 Methodology

The information and data used in this paper is obtained from a larger 4-year (2013-2017) research project; the Water Resilient Green Cities Africa (WGA) which is funded by DANIDA. The overarching objective of the research project is to explore water resilience by using urban green infrastructure as a climate change adaptation strategy in flood and drought prone cities. The aim is to further identify Landscape Based (LSM) options for stormwater management and suggest strategies using Dar es Salaam and Addis Ababa Cities as cases. This paper covers information from Dar es Salaam City where the Mbezi River Catchment (Figure 1) is the project case study site. The Catchment will be used to highlight the institutional challenges and opportunities faced in planning and governing stormwater in unplanned settlements located at grassroots’ level. The catchment covers upstream, midstream and downstream sites and this paper draws from data collected on actors and institutions at the midstream site named GobaKibululu.

The main approach for the study was qualitative and the methods used included official government document reviews; face-to-face interviews, stakeholder interactions during workshop sessions and focus group discussions (FGD) which were conducted during different periods of the fieldwork. The data and information on the role of urban land use planning and storm water management included documentary review and institutional mapping of relevant government ministries and departments; review of policies and acts that govern urban planning and storm water management. The output was a profile of city, municipal level institutions; and their roles.

In 2014 the work covered reconnaissance activities, collection of baseline information and institutional mapping at city level. In 2016 mapping and interviews were conducted at case study levels whereby interviews with two local leaders at sub-ward level; three local community groups and mapping of livelihood activities along the Catchment were done. Questions focussed on mapping of the key local community institutions/actors; documentation of their characteristics, type of activities and level of activity i.e. household or community level and how did they engage in water management and green space use. Three community based groups were purposefully selected to provide this information. The information was also complemented by face-to-face interviews done with key-informants namely urban planners, engineers and environmental managers at Municipal level and local officials at sub-ward or grassroots level locally called *Mtaa*. Key topics included their (officials) roles in the context of urban planning and storm water management. The interviews were held during city level workshops meant to understand institutional roles and challenges for adopting LSM. Officials were asked to highlight city activities in storm water management and indicate challenges related to the adoption of LSM.

2.2 Description of the Study Area

The case study area is the Mbezi River Catchment which is located in Kinondoni District in Dar es salaam City (Figure 2). The main livelihood activities pursued by the residents are typical of many informal settlements in the country, which include, trading (petty, retail and wholesale), repair workshops, sand-cement blocks making, urban farming, animal husbandry, food vending (mostly women), as well as sand quarrying on the river bed. Some of the challenges faced include lack of piped water supply and dependence on unregulated water sources for every-day use.

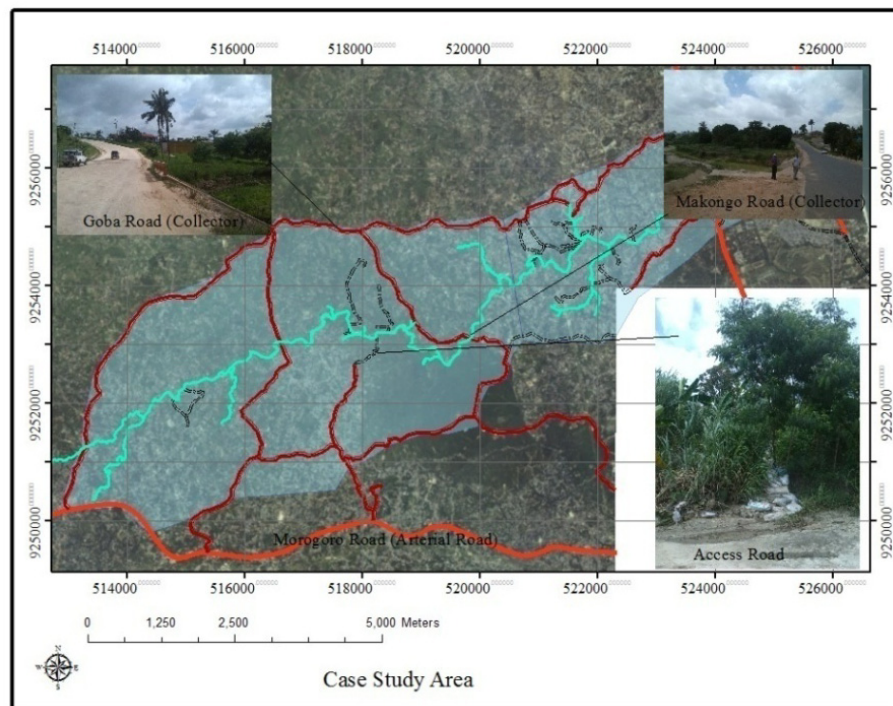


Figure 1. The Mbezi catchment area

Source: Reconnaissance Site Survey and Image Satellite (Baseline Case study Area report, 2013)

The development in the Mbezi river catchment is largely informal, although the area was designated “urban agriculture activities/open land” by the Master Plan for Dar es Salaam (1978)(Mn’gongo, 2005); over the years the land was and has been sub-divided by landowners and sold to would-be house builders. This unguided process of obtaining land in the City is done oblivious of urban land use planning authorities hence the haphazard development of housing even on the river banks and on natural storm water channels.

3. Findings and Discussions

3.1 The Role of Urban Land Use Planning and Storm Water Management Related Institutions

Central Government Level Institutions

The Ministry (MLHSD) is the key institution responsible for management and administration matters related to the development of urban land. With reference to urban land use planning, the Ministry provides standards for planning authorities on the most appropriate use of land such as sub-divisions, change of use and extension of use in order to ensure its protection and maintenance of the quality of land. The provisions are outlined in the Urban Planning Act (2007) which among other things provide for the designation and protection of public open spaces, recreational areas and hazardous areas from residential encroachment informal or otherwise. Other provisions providing oversight for the ‘orderly management of land use’ are stipulated in the Land Use Planning Act of 2007. In Tanzania, the Master Plan is the preferred tool for urban planning and management. Unfortunately the approach is said to feature a top-down approach that allows little collaboration of the community in the decision-making process (Vedeld, Kombeet *al*, 2012). Often times therefore, a number of actions such as housing development in marginal lands are encroached by poor households regardless of what the plans prescribe. In addition, the demand for building compliance on planned allocated plots and large unaffordable plot sizes (the lowest size is 400 sq.m for a high density plot) deters poor house builders who cannot fully meet building standards for housing construction because of low incomes.

City and Municipal Level Institutions

At the City/Municipal level the Department of Urban Planning, Urban Agriculture, Natural Resources and Environment, Urban Planning Section - oversee land use planning, the preparation of detailed planning schemes and land use development control. The zoning, protection and consequent enforcement of land uses such as residential, recreational open spaces, river valleys; urban agriculture areas and; hazard lands, are done by the

department. But as hinted above, without regular follow up and enforcement; open areas including marginal lands, become hotspots for the development of informal housing. Encroachment and weak enforcement of land use development control is one of the serious challenges to storm water management in many developing countries (Parkinson and Marks, 2005).

At implementation level, the Works Department in the municipality largely plans, designs, constructs and maintains local roads in the planned settlements. The current trend for storm water management is for the works department to plan and construct conventional networked system along major roads in collaboration with the Tanzania Roads Authority (TANROADS). The major setbacks reported by the Municipal engineer during interviews was the small allocation of resources from central government and the lack of integrated storm water management actions with other city developments. The authorities responsible for water supply, sewerage and sanitation are located in different organisations. Studies do indicate that, water supply, sewerage and stormwater services were and are in many developing countries compartmentalised in different institutions both physically and institutionally and it is during intense city floods when the fragmentation is most visible (Parkinson and Marks, 2005).

3.2 The Role of Local Level Institutions and Practices

Formal local institutions

Documentary reviews and interviews show that the Ward and Sub-ward are the smallest administrative units of local government linked to the Municipal Councils in Tanzania. These are formal community' institutions and are critical units of democratic governance within the decentralized local government system. Among other things, wards and sub-wards are responsible for monitoring and enforcing laws and by-laws in the local neighbourhoods; monitoring day-to-day development activities such as ensuring healthy environments. On few occasions during rainy seasons, they may mobilise the collective cleaning of storm water channels that have been blocked.

With regards to housing in the study area; Ward and sub-Ward officials commonly oversee the sub-division and sale of residential land to would-be house builders. The exchange is done under customary tenure by individual landowners. A walk around the study area with officials revealed different sized plots and the officials informed that the sizes are preferred depending on what one can afford. They added that this was one of the reasons why plots in "*unplanned areas are preferred over plots provided by the government*" (Sub-Ward official, Fieldwork, 2014).

However such practices were reported to be done with or without regard for the most basic infrastructure such as roads and drainage systems as well as protection of river banks resulting in a precarious, haphazard, organic layout of the settlements (Fieldwork, 2014). Adverse effects are most noticeable during the rainy seasons and this includes river bank erosion from stormwater flushes. When the local officials in Goba do try to enforce by-laws, for example mitigating environmental degradation along the river banks; they face strong resistance from the community who perceive the right to carry out their livelihood activities such as farming, house building and sand-mining on or near the river. It is not uncommon for the poor to use environmental resources for survival but sometimes the negative effects on the environment creates risks, uncertainty and further poverty conditions even in Dar es Salaam city (START, 2011; World Commission on Environment and Development, 1987). Indeed, the hostility and mistrust between the Wards and sub-Ward officials was reported as a challenge by both officials and members of community groups interviewed, sometimes affecting collective community actions (Fieldwork, 2014).

Similar to the good urban planning intentions of the Ministry described above; the transference of formal sometimes costly policies and practices from central to the local/municipal departments and the limited participation by local communities; often overshadows the possibilities and opportunities for physically and socially sustainable practices. Brown and Farralley (2009, p.844) revealed such impediments as "technological path dependency" whereby the urban water industry (for example) rely on "highly visible solutions rather than attempt new "ways-of-doing, for example, non-structural measures". Often, conventional practices are preferred over non-conventional by technocrats.

Informal Institutions

A few informal institutions or community associations were found to have emerged in order to facilitate solutions for coping with the lack of basic services such as potable water supply and storm water drainage infrastructure. Interviews with 3 local community groups were done during the fieldwork of 2016 and it revealed the existence of loosely networked groups coming together to address some of the developmental issues in the

study area. All of the groups comprised mostly women in self-organisation initiatives aimed at collectively addressing issues related to physical/environmental threats including water shortages and flood related risks; economic/livelihood and mutual assistance during times of hardships. They include local groups or organisations such as credit rotating schemes; *Upatu* and *VICOBA* systems (Note 1). It was reported that about 18 such groups are known along the mid-stream catchment by the sub-ward offices (Fieldwork 2016 and records from sub-ward offices). Interviews revealed that the groups' characteristics were largely based along ethnic, common purpose/objectives and economic status and regular meetings and information exchange were an important aspect of their activities. The women reported how they formulated a group 'constitution' which outlined rules and norms related to managing administrative issues like leadership, membership contributions, loans, other financial issues and planned activities. The objectives include not only assisting members, but also improving their housing environments collectively as the following quote illustrates;

"We are planning to lend each group member some money on a rotating basis to support the purchase of Simtanks (plastic storage tanks of 500 -1000 litres) and few gutters so that families can harvest rain water. It will take some time for all members to receive and payback the loans because Simtanks and gutters are expensive" (Leader of Mshikamano Group (21 members, all female- Fieldwork 2016)

"Two of us were affected by floods in May 2015, the wall of my house was destroyed because my house is close to a gully and other member had her toilet destroyed to. But since I was a member of our neighbourhood group, I was able to borrow money to rebuild my wall." (A female member of Mshikamano Group, Fieldwork, 2016).

It was also reported during FGDs that the community in Goba Kibululu was also engaged in local actions to cope with storm water run-off that were not necessarily facilitated by groups through financial contributions or in-kind labour. These included collaboratively planned and constructed storm water drains in critical areas of the settlement to guide stormwater, spearheaded by the local sub-ward office, and community members. Other local solutions observed to mitigate flooding were planting bush (bamboo) and grasses (elephant grass) along the river banks and open areas in proximity to their buildings. Further observations in the study area also revealed how members of the community improvise to obtain potable water for everyday use including gardening. Some households obtain water from small-scale water "suppliers" who tap groundwater sources for sale using boreholes. Other members purchase water from small and large mobile water vendors which they store in a variety of storage containers. Only a few households were reported to tap rain water in large quantities; small buckets of 20 litres were mostly used due to the expenses involved in purchasing large water storage containers. The river water is used to water gardens and farms along the river banks. The local strategies to adapt to or use storm-water run-off as reported by the local groups are indicative of the possible solutions some of which match the LSM principles such as rain-water harvesting and planting of green infrastructure to reduce run-off. Future possibilities in local adoption of LSM were interpreted from the actions of these local institutions namely community groups or associations. Indeed, Agrawal (2008) points out how future interventions for climate change adaptation can be interpreted from practices by local institutions. Rather than seek solutions related to conventional SWM systems, engineers and planners can learn from the community or use the community as a platform to introduce alternative affordable SWM solutions.

The above review highlights that, as in many developing world cities, Dar es Salaam is faced with rapid urbanisation and the development of informal settlements. Indeed in many other developing countries in sub-Saharan Africa about 60% of the urban population reside in unplanned residential areas many of which lack basic infrastructure such as drainage and solid waste disposal systems (URT, 2012; UN-HABITAT, 2012). Despite having land use plans in place to guide urban development; lack of systematic enforcement during implementation as well as resource constraints results in encroachment on vacant open land by urban dwellers. The community of Goba occupied the peri-urban settlement some of which was designated hazardous and constructed houses without any planning oversight, along the Mbezi river banks and other open spaces. As a result, the natural storm water channels got blocked with housing construction and everyday practices of indiscriminate disposal of solid waste in storm water channels further exacerbated run-off problems leading to floods especially during intense rainfall. Park and Ole (2005:3) report that households usually take advantage of the weak enforcement actions by local authorities by building on open land, flood plains and natural drainage paths more so if the settlements are in peri-urban areas.

But despite the proliferation of informal housing, documentary reviews and discussions revealed that, formally planned areas in Dar es Salaam also face storm water run-off problems during intense rainfall because local authorities face insufficient funds for often used conventional, structural storm water-systems. Indeed, studies reveal that technocrats have different views and perceptions and they are used to formal bureaucratic/conventional practices such as the conveyance and disposal of stormwater vis-à-vis re-use (Brown

and Farrelly, 2009). However LSM offers planning institutions an alternative ‘softer’ option for managing stormwater at the same time offering opportunities for water re-use. Rather than use expensive storm water management solutions; municipal officials can provide a facilitating, capacity building role, or influence regulatory changes related to the adoption and mainstreaming of LSM options among the community (*Ibid.*). The review does not in any way dismiss the importance of capacity building to enable municipal staff adopt and implement LSM. Undeniably, insufficient resources (capital and human) are a critical barrier to the adoption of climate change adaptation strategies in developing countries (Rubin, 2011:36).

The local level analysis has shown how the grassroots’ community cope with the gap in service provision (stormwater drainage systems and potable water supply) in a variety of ways. Several individual and group collective efforts by the community have been undertaken to cope, indicative of the practices done by many households living in informal or unplanned settlements. While the collective coping strategies appear to relate mainly towards income generation and mutual assistance; these are also instrumental in enabling the improvement of households’ environment including water supply provision in general. The actions, networks and mutual support indicate a stock of social capital and a capacity to self-organise that can be harnessed to initiate environmentally sustainable interventions at community level such as landscape-based storm water management. Social capital facilitates members of the group to work together to pursue shared objectives (Putnam, 2004) and CBOs as local institutions in the Catchment area provide good entry points for LSM. The coping strategies of the local communities suggest that they understand the SWM challenges brought about by indiscriminate housing development in their areas and the local solutions attest to this awareness. The local community appears pro-active and since communities are known to be the primary agents of change they are critical players that should not be ignored.

Table 1 below proposes the possible institutional roles, practices and resources available that are relevant for participatory LSM planning and for achieving the common vision. Participatory planning requires that the community and key stakeholders be involved at all stages of planning, design and implementation of solutions. Among the many roles of the institutions, each has a part to play in facilitating the adoption of LSM during such a planning process and all knowledge is valuable.

Table 1. Institutional roles in a participatory LSM planning process

Institution	Role in participatory planning for LSM	Remarks
Central Govt (Public)		
i. Management and administration matters related to the development of urban land	<ul style="list-style-type: none"> – Administrator and facilitator for LSM implementation – Enablers of the new LSM approach 	<ul style="list-style-type: none"> – Brings planning knowledge, sharing of information, – May provide structure to the planning of LSM but does not impose solutions to local communities
City/Municipality (Public)		
ii. Designate and protect public open spaces, recreational areas and hazardous areas from residential encroachment	<ul style="list-style-type: none"> – Facilitators, can influence change in regulations – Can provide enforcement of regulations related to LSM 	<ul style="list-style-type: none"> – Brings planning knowledge, sharing of information and receives information and local knowledge, – Provide structure to the planning of LSM
iii. Enforcement of regulations e.g. plot coverage, ration of unsealed/unpaved areas on the compound	<ul style="list-style-type: none"> – Resources and capacity building to local leaders 	<ul style="list-style-type: none"> – Provides open spaces
iv. The zoning and consequent enforcement of different land uses e.g. recreational open spaces, river valleys and buffer zones; urban agriculture, hazardlands	<ul style="list-style-type: none"> – Development control – Receivers of new sustainable approaches 	<ul style="list-style-type: none"> – Sets bye-laws for LSM elements e.g. rain-water harvesting and building design
Local leaders (Public/Civic)		
v. Local “planning” activities with regards to housing development and livelihoods activities	<ul style="list-style-type: none"> – Local oversight – Community mobilisation, awareness raising – Somewhat “planners” and enforcers 	<ul style="list-style-type: none"> – Possess contextual knowledge of the community and environment – Can provide incentives for LSM e.g. bulk buying for rain water-harvesting storage tanks (?)
vi. Monitoring the day-to-day development activities in their localities such as cleaning storm water drainage systems, tree-planting campaigns	<ul style="list-style-type: none"> – Development control – Receivers of new sustainable approaches and possibly ‘champions’ 	<ul style="list-style-type: none"> – Mediation for LSM e.g. giving up some land space – Propose bye-laws in collaboration with community, Municipality and professionals
Community (Civic/Private)		
vii. Owners of land and houses	<ul style="list-style-type: none"> – Implementers and users/owners of land 	<ul style="list-style-type: none"> – Information on local coping strategies/practices
viii. Livelihood endeavors which depended on water both potable and non-potable such as stormwater run-off and the green spaces available	<ul style="list-style-type: none"> – Users of services (water, stormwater drainages etc) – Receivers of new sustainable approaches and possibly ‘champions’. 	<ul style="list-style-type: none"> – Volunteer land for LSM elements – Incentives for LSM implementation e.g. water-harvesting, farming
ix. Solutions to respond to risks caused by lack of physical infrastructure		<ul style="list-style-type: none"> – Social capital for collective/group actions
x. Self-organisation initiatives were aimed at collectively addressing issues related to physical/environmental		<ul style="list-style-type: none"> – Synthesis of local strategies with LSM requirements
Water Green Cities Africa (WGA) Project Team (External collaborators)		
	<ul style="list-style-type: none"> – Facilitation – Resources (expertise) – Capacity building – Knowledge exchange 	<ul style="list-style-type: none"> – Information exchange – Knowledge on best practices for LSM – Design of LSM elements – Synthesis of local strategies with LSM requirements – Basic information e.g. Maps, analysis of the contexts etc

4. Conclusion

The paper sought to illustrate the institutional challenges inherent in adopting landscape-based stormwater

management approaches in a rapidly urbanizing city giving examples from an informal settlements located along the Mbezi River catchment in Dar es Salaam City. While formal institutions shape and guide individual and community actions, they can also be constraining and result in parallel informal rules. The weak coordination in urban planning and development control of land uses; poor links with community and lack of a central agency to manage storm water were some of the institutional challenges observed. However actions by individual and community groups at local level, albeit in a fragmented manner were observed and considered to offer a platform to introduce LSM in the communities. Participatory and collaborative actions during planning and design for LSM are proposed with emphasis on supporting and improving community strategies so that the people can socially and economically benefit from LSM.

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Note

Note 1. *Upatu* and *VICOBA* systems are forms of rotating saving and credit schemes which largely operate among most low income urban residents in Tanzania.

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